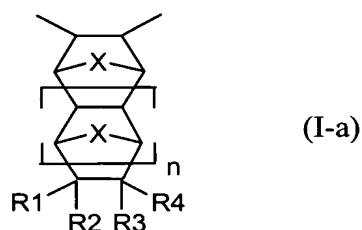


What is claimed is:

1. A polymer comprising a repeating unit represented by the formula:

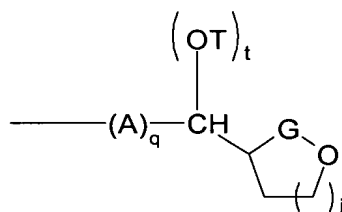


wherein in Formula (I-a):

10 X is O, S, $-\text{CH}_2-$ or $-\text{CH}_2\text{CH}_2-$;

n is an integer from 0 to 5 inclusive;

each R1 to R4 independently represents hydrogen, a linear or branched (C_1 to C_{20}) alkyl, or a linear or branched (C_1 to C_{20}) haloalkyl, subject to the proviso that at least one of R1 to R4 is a group represented by the formula:



20 wherein: G is $-\text{SO}_2-$ or $-\text{C}(\text{O})-$; T is H or $-\text{Si}(\text{R}^{20})_3$; t is 0 or 1;

j is 1 or 2; q is 0 or 1; and A is a spacer moiety represented by $-(\text{CH}_2)_m-$,

$-(\text{CH}_2)_m\text{O}-$, $-(\text{CH}_2)_m\text{O}(\text{CH}_2)_m-$, $\text{O}(\text{CH}_2)_m-$,

$-(\text{CH}_2)_m\text{NR}^9(\text{CH}_2)_m-$, $-(\text{C}(\text{R}^{10})_2)_m(\text{C}(\text{R}^{10})_2)_m\text{O}(\text{C}(\text{R}^{11})_2)_a-$,

$-(\text{CR}^{11})_2-\text{CH}-(\text{CH}_2)_a\text{OR}^{12}$ or $-\text{CH}(\text{OH})\text{CH}-(\text{CH}_2)_a\text{OR}^{12}$,

25 wherein: each R^9 independently is (C_1 to C_5) alkyl; each R^{10} independently is hydrogen, halogen, (C_1 to C_5) alkyl, or (C_1 to C_5) haloalkyl; R^{11} independently is hydrogen or halogen;

each R^{12} independently is hydrogen, $(C_1 \text{ to } C_{10})$ alkyl or $(C_1 \text{ to } C_5)$ haloalkyl; each R^{20} independently is a $(C_1 \text{ to } C_4)$ alkyl; each a independently is 2 to 6; and each m independently is 0 to 4.

5 2. The polymer of claim 1 wherein G is $-C(O)-$, T is $-Si(CH_3)_3$, t is 1, n is 0, q is 0 and j is 1.

10 3. The polymer of claim 2 wherein X is $-CH_2-$, and R_1 , R_2 and R_3 are each hydrogen.

4. The polymer of claim 1 wherein G is $-SO_2-$, T is H , t is 1, n is 0, q is 0 and j is 2.

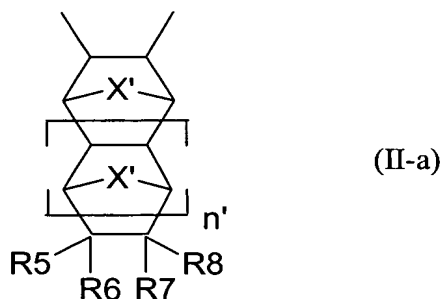
15 5. The polymer of claim 4 wherein X is $-CH_2-$, and R_1 , R_2 and R_3 are each hydrogen.

6. A polymer comprising a repeating unit represented by the formula



wherein: G is $-SO_2-$ or $-C(O)-$; T is H or $-Si(R^{20})_3$, each R^{20} independently is $(C_1 \text{ to } C_4)$ alkyl; t is 1; and j is 1 or 2.

7. The polymer of claim 1 further comprising a repeating unit represented by the following formula (II-a):



wherein in Formula (II-a):

10 X' is O, S, -CH₂- or -CH₂CH₂-;

n' is an integer from 0 to 5 inclusive; and

each R5 to R8 independently is selected from: hydrogen; linear or branched (C₁ to C₂₀) alkyl; linear or branched (C₁ to C₂₀) haloalkyl; substituted or unsubstituted (C₄-C₁₂) cycloalkyl; substituted or unsubstituted (C₁ to C₁₀) hydroxyalkyl;

15 -(CH₂)_bC(CF₃)₂OR¹³; -(CH₂)_bC(O)OR¹⁴; -(CH₂)_bOR¹⁴; -(CH₂)_bOC(O)R¹⁴; -(CH₂)_bC(O)R¹⁴;
 -(CH₂)_bOC(O)OR¹⁴; -(CH₂)_bC(O)OR¹⁵; -(CH₂)_bSi(R¹⁶)₃;
 -(CH₂)_bSi(OR¹⁶)₃; -(CH₂)_bNR¹⁷SO₂R¹⁸; or -(CH₂)_bSO₂NR¹⁷R¹⁸;

wherein: b is 0 to 4; each R¹³ independently is selected from hydrogen, linear or branched (C₁-C₁₀) alkyl, or linear or branched (C₁-C₁₀) haloalkyl; each R¹⁴ is selected from
 20 hydrogen, linear or branched (C₁ to C₁₀) alkyl, or substituted or unsubstituted (C₄-C₈) cycloalkyl; R¹⁵ is an acid labile group; each R¹⁶ independently is selected from hydrogen and (C₁ to C₅) alkyl; each R¹⁷ independently is selected from hydrogen, linear or branched (C₁-C₅) haloalkyl, linear or branched tri(C₁-C₁₀) alkylsilyl, -C(O)CF₃, -C(O)OR¹⁹, or -OC(O)OR¹⁹;
 each R¹⁸ independently is selected from hydrogen, linear or branched (C₁-C₁₀) alkyl, linear
 25 or branched (C₁-C₅) haloalkyl, -OR¹³, -C(O)R¹³, substituted or unsubstituted (C₃-C₈) cycloalkyl, substituted or unsubstituted cyclic esters containing 2 to 8 carbon atoms, substituted or unsubstituted cyclic ketones containing 4 to 8 carbon atoms, substituted or unsubstituted cyclic ethers or cyclic diethers containing 4 to 8 carbon atoms; each R¹⁹

independently is selected from linear or branched (C₁-C₁₀) alkyl, or linear or branched (C₁-C₁₀) haloalkyl; R5 and R6 and/or R7 and R8 independently taken together can form a (C₁-C₅) alkylidenyl group or a spiral anhydride group; R6 and R7 taken together with the two ring carbon atoms to which they are attached can form a cyclic (C₃ to C₆) anhydride group, a
5 cyclic (C₃ to C₆) sulfonamide group, or a cyclic (C₃ to C₆) sultone group.

8. The polymer of claim 7 wherein X' is -CH₂-, n' is 0, each of R5, R6 and R7 is H, and R8 is -(CH₂)_bC(O)OR¹⁴, wherein b is 0 and R¹⁴ is t-butyl.

10 9. The polymer of claim 8 wherein X is -CH₂-, n is 0, each of R1, R2 and R3 is H, q is 0, j is 2, T is H, t is 1, and G is -SO₂-.

10. The polymer of claim 7 wherein X' is -CH₂-, n' is 0, each of R5, R6 and R7 is H, and R8 is -(CH₂)_bC(O)OR¹⁴, wherein b is 0 and R¹⁴ is 1-methyl cyclopentyl.

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11. The polymer of claim 10 wherein X is -CH₂-, n is 0, each of R1, R2 and R3 is H, q is 0, j is 1, T is -Si(R²⁰)₃ wherein each R²⁰ is methyl, t is 1, and G is -C(O)-.

20 12. The polymer of claim 11 wherein the polymer further comprises another repeating unit, the another repeating unit being represented by Formula (II) wherein X' is -CH₂-, n' is 0, each of R5, R6 and R7 is H, and R8 is -(CH₂)_bC(CF₃)₂OR¹³ wherein b is 1 and R¹³ is hydrogen.

13. A photoresist composition comprising the polymer of claim 1.

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14. A photoresist composition comprising the polymer of claim 7.

15. A process for generating an image on a substrate, comprising:

(a) coating the substrate with a photoresist composition comprising the polymer of claim 1;

(b) image wise exposing the film to radiation; and

(c) developing the image.

5

16. The process of claim 15 wherein the radiation has a wavelength of about 157 nm.

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17. The process of claim 15 wherein the radiation has a wavelength of about 193 nm.

18. A process for generating an image on a substrate, comprising:

(a) coating the substrate with a photoresist composition comprising the polymer of claim 7;

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(b) image wise exposing the film to radiation; and

(c) developing the image.

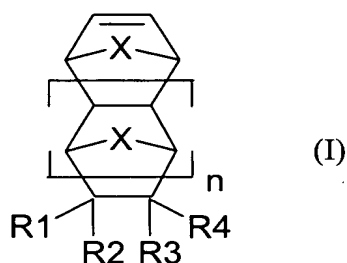
19. The process of claim 18 wherein the radiation has a wavelength of about 157 nm.

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20. The process of claim 18 wherein the radiation has a wavelength of about 193 nm.

21. A compound represented by the formula:

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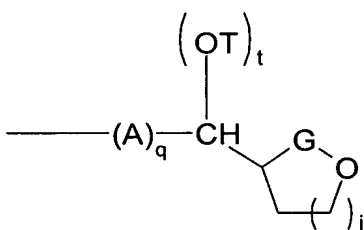


wherein in Formula (I):

X is O, S, $-\text{CH}_2-$ or $-\text{CH}_2\text{CH}_2-$;

n is an integer from 0 to 5 inclusive;

each R1 to R4 independently represents hydrogen, a linear or branched (C_1 to C_{20}) alkyl, or a linear or branched (C_1 to C_{20}) haloalkyl, subject to the proviso that at least one of R1 to R4 is a group represented by the formula:



wherein: G is $-\text{C}(\text{O})-$ or $-\text{SO}_2-$; T is H or $-\text{Si}(\text{R}^{20})_3$ wherein R^{20} is H or (C_1 to C_4) alkyl; t is 0 or 1; j is 1 or 2; q is 0 or 1; and A is a spacer moiety represented by $-(\text{CH}_2)_m-$, $-(\text{CH}_2)_m\text{O}-$, $-(\text{CH}_2)_m\text{O}(\text{CH}_2)_m-$, $\text{O}(\text{CH}_2)_m-$, $-(\text{CH}_2)_m\text{NR}^9(\text{CH}_2)_m-$, $-(\text{C}(\text{R}^{10})_2)_m(\text{C}(\text{R}^{10})_2)_m\text{O}(\text{C}(\text{R}^{11})_2)_a-$,

$-(\text{CR}^{11})_2-\text{CH}-(\text{CH}_2)_a\text{OR}^{12}$ or $-\text{CH}(\text{OH})\text{CH}-(\text{CH}_2)_a\text{OR}^{12}$,

wherein: each R^9 independently is (C_1 to C_5) alkyl; each R^{10} independently is hydrogen, halogen, (C_1 to C_5) alkyl, or (C_1 to C_5) haloalkyl; each R^{11} independently is hydrogen or halogen; each R^{12} independently is hydrogen, (C_1 to C_{10}) alkyl or (C_1 to C_5) haloalkyl; each a independently is 2 to 6; and each m independently is 0 to 4.

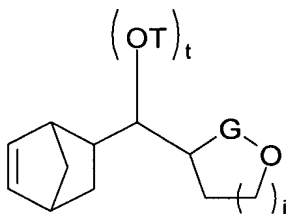
22. The compound of claim 21 wherein G is $-\text{C}(\text{O})-$, T is $-\text{Si}(\text{CH}_3)_3$, t is 1, n is 0, q is 0 and j is 1.

23. The compound of claim 22 wherein X is $-\text{CH}_2-$, and R1, R2 and R3 are each hydrogen.

24. The compound of claim 21 wherein G is $-\text{SO}_2-$, T is H, t is 1, n is 0, q is 0, and j is 2.

25. The compound of claim 24 wherein X is $-\text{CH}_2-$, and R1, R2 and R3 are each hydrogen.

26. A compound represented by the formula



wherein G is $-\text{C}(\text{O})-$ or SO_2- , T is H or $-\text{Si}(\text{CH}_3)_3$, t is 1, and j is 1 or 2.